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THE FIRST AND ONLY ATOMIC NEWS SERVICE

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Dear Sir:

A new uranium ore refinery and other facilities for the production of uranium feed materials will be constructed on a 1,200 acre site near the Miami river, 19 miles northwest of downtown Cincinnati. Termed the "Feed Materials Production Center", the new installation will produce uranium in forms suitable for use in the USAEC's fissionable materials production plants. Catalytic Construction Co., Philadelphia, are designing the new facilities; George A. Fuller Construction Co., New York, are the prime construction contractors for the job, the total cost of which has been set at $50,000,000.00.

The atomic weapon assembly facility at the Pantex Ordnance Works, some 17 miles southwest of Amarillo, Texas, is to be operated by the Procter & Gamble Co., Cincinnati, on a cost-plus-fixed-fee basis. Reactivation of the plant is now underway, with a construction contract for the work recently awarded Walden, Fulton and Payne, of Lubbock, Texas, whose low bid was $1,408,005.00.

California Research and Development Co. (Standard Oil of Calif. subsidiary), will be the architect-engineer-management contractor of the new USAEC developmental facility to be built on the site of the Weldon Spring Ordnance Works, Missouri. Preliminary engineering studies are now underway (AEN:3/27/51).

A specialized research laboratory will be built by the USAEC on a section of the National Bureau of Standards grounds south of Boulder, Colo. Stearns-Rogers, Denver, Colo., will handle architect-engineer services. When completed, the National Bureau of Standards will operate the facility; staff will be about 50.

A $10,000,000.00 plant will be built near Mulberry, in Polk County, Fla., by International Minerals & Chemical Corp., to produce phosphate, and recover uranium as a by-product. (The Florida phosphate sands contain uranium minerals in such small quantities that only by-product operation is feasible.)

The Eniwetok Atoll atomic weapons tests are now scheduled for the first week in May, of this year. The disclosure was made in Washington last week when the House Armed Services Committee appointed Representative Hebert, of Louisiana, as an official observer. Mr. Hebert said he would leave Washington May 1st, and return May 12th.

With the dissolution of the NEPA (Nuclear Energy for Propulsion of Aircraft) project at Oak Ridge, Andrew Kalitinsky, chief engineer there, has now gone to the M. W. Kellogg Co. as manager of its special projects department. (NEPA, the group working at Oak Ridge on aircraft nuclear propulsion, had determined the feasibility of using nuclear energy for aircraft, and the proper approach to ensure success. Now, the construction of a nuclear reactor for an aircraft will be done by the aircraft gas turbine division of General Electric Co., Cincinnati, O., under a USAEC contract, recently negotiated with that firm. G-E's approach will be the closed-cycle turbine, method most favored by Kalitinsky's NEPA group.)

Subscription rates: United States, U.S. possessions, and Canada, $18.00 a year. Latin America, $20.00 a year. All other countries, $25.00 a year.

AT THE ATOMIC CITIES & CENTERS IN THE UNITED STATES...

LOS ALAMOS, New Mexico- This center of nuclear research is a permanent establishment, Carroll L. Tyler, manager for the USAEC here recently declared. He predicted that it will grow to a community of at least 14,500 persons. Now, he said, the monthly payroll is running at about two and one quarter million dollars. (Including Sandia Base, the atomic weapon engineering and assembly base, at nearby Albuquerque, the yearly payroll for Los Alamos and Sandia is now approximately $31 million.)

ARCO, Idaho- Continual progress marks the reactors under construction at this reactor testing station. The chemical processing plant, which will serve the reactors, is now in an advanced stage of completion. Last fortnight, the appointment of a resident engineer, Wells R. Dickinson, was announced.

HANFORD PLUTONIUM WORKS, Washington- Construction is now underway on one of the four buildings which will form a $14.5 million laboratory group at the Works here. It is expected that the four buildings will be completed during the next two year construction period. The building which is now under construction will be the health instruments and control unit; Sound Construction Co., Seattle, on a $1,154,203.00 contract are erecting it. The other three buildings, now being designed, will be operated by the technical divisions. They will include radio chemistry, radio metallurgy, and pile technology. The new group will be adjacent to the area which contains the major portion of the present development laboratories.

An indication of the manpower devoted to producing plutonium may be seen in the current payroll at Hanford, which has reached $66 million annually. Almost 16,000 persons comprise this payroll, which includes both operating and construction forces, employees of schools in the supporting town of Richland, etc. Expansion of the works area is still underway; in the last three years, more than $350 millions have been spent on Hanford construction.

ARGONNE NATIONAL LABORATORY, Fremont, Ill.- Investigations into the use of dextran as a blood volume expander are now under way at Argonne. (Dextran is currently under medical scrutiny by a number of research organizaations here and abroad to determine its possible use as a plasma expander during periods of emergency.) In a cooperative research program with industry, the plant physiology group of the Laboratory's division of biological and medical research, together with a team from Commercial Solvents Corp., Terre Haute, Ind. (the dextran producers) are using radioactive dextran in studying the metabolism and ultimate fate of dextran in the body. At present, it is not known whether dextran is completely metabolized or whether a part is stored in some organ of the body. The bulk is lost from the blood stream in 12-hours. Since about 40% of dextran given intravenously cannot be accounted for by methods currently available for chemical detection, the use of radioactive dextran may provide an answer to the problem.

ATOMIC PATENT DIGEST...latest U.S. applications & grants...

The following U.S. patents (and one application), developed in the course of nuclear research and allied work, are now available on a royalty free (but non-exclusive) licensing basis. Inquiries should be made to the Patent Branch, USAEC, Washington 25, D. C., by prospective licensees. (1) Pulse integrating circuit. Pat. No. 2,543,491. (2) Preparation of diborane, Pat. No. 2,543,511. (3) Radio frequency voltage supply. Pat. No. 2,543,902. (4) Preparation of uranium nitride. Pat. No. 2,544,277. (5) Electrolytic cells. Pat. 2,544,285. (6) Preparation of diborane. Pat. No. 2,544,472. (7) Linear accelerators. Pat. No. 2,545,595. (8) Methods of coating with plutonium acetylacetonate and coated product. Pat. No. 2,545,606. (9) Sulfur-containing compounds of neptunium and a process for their preparation. Pat. No. 2,545,612. (10) Frequency modulation system. Pat. No. 2,545,623. (11) Preparation of lithium borohydride. Pat. No. 2,545,633. (12) Transuranic metal halides and a process for the production thereof. Pat. No. 2,545,920. (13) Fast impulse circuits. Pat. No. 2,545,924. (14) Apparatus for regulating high voltage. Pat. No. 2,546,106. (15) Multiple chisel structure for disintegrating and removing incrustations from interior walls of receptacles. Pat. No. 2,546,700. (16) Method of dissolving thorium value. Pat. No. 2,546,933. (17) Zirconium-hafnium separation process. Pat. No. 2,546,953. (18) Detection or warning system. Application No. 175,529.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS- A new rapid data scaler and printer prints in Arabic numerals from 100 to 500 three-digit numbers per second. The device consists of two units--the Scaler and the Printer. The Scaler receives a time-varying voltage analog and determines the number represented by it. A three-digit number is determined with an accuracy of plus or minus 2 out of a full-scale count of 999, and at a rate of 1 sample/sec. to 500 samples/sec. The Printer unit then prints the value thereby determined on a tape of electrically sensitized facsimile paper. This is accomplished virtually instantaneously by means of a cluster of wire electrodes which print the three digits in Arabic numerals.--Atomic Instrument Co., Cambridge 39, Mass.

New 250 KV particle accelerator, for neutron production, nuclear reactions, and scattering experiments; produces a 250 microampere continuous beam of protons or deuterons. For charged particle reactions and scattering experiments in the range up to ½ Mev. System said to be admirably adapted to the production of monoenergetic neutrons by the new tritium-deuteron reaction. No special building facilities are required; accelerator is compact and mobile. Complete beam monitoring is provided; targets available to suit individual requirements.--American Instrument Co., Inc., Silver Spring, Md.

Model Su-8 Pocket Dosemeter consists of a small ionization chamber and electroscope with a miniature microscope trained on the electroscope fiber. Standard model has full scale of 100 mr. (Model SU-8H, a modification, has scale range of 200 mr; Model SU-11, with full scale of 50 r, is for civil defense work.)..... Model SU-9 Dosemeter Charger is a battery operated instrument which will recharge the SU-8 in a matter of seconds.--Tracerlab, Inc., Boston 10, Mass.

NOTES- Well prepared and useful catalogues, showing their products and services, are now available from Radiation Counter Laboratories, 1844 W. 21st St., Chicago 8, Ill., and Atomic Instrument Co., 84 Massachusetts Ave., Cambridge 39, Mass.

INDUSTRIAL ACTIVITY...in the nuclear field...

The Kellex Corporation, one of the first industrial firms to enter the nuclear energy field (1943), has prepared an 18-page brochure describing its facilities and outlining the scope of its participation in this field through research, development and design engineering contracts with the USAEC and its contractors, and other work for the U. S. Armed Services. The publication, "Engineering New Fields", is available from Kellex ,233 Broadway, New York 7, N.Y.

Kellex, through a recently organized department, will study industrial applications of new techniques and equipment, which result from its efforts in the nuclear energy and other fields. Formerly a subsidiary of M. W. Kellogg, Kellex is now associated with Vitro Manufacturing Co., Pittsburgh, a pioneer industrial producer of uranium chemicals and a USAEC contractor.

The role of automatic temperature, humidity, static pressure and air velocity controls in atomic energy plants was recently outlined by J. A. Cutler, president of the Johnson Service Co., Milwaukee, whose control systems are used extensively in these plants in this country. According to Cutler, there are currently three broad areas of application of automatic control apparatus in atomic energy plants. Since plants where radioactive materials are handled are almost always equipped with complete air-conditioning systems, automatic temperature control apparatus finds the usual industrial use here. However, a second type of control application is specifically related to the presence of radioactive materials. In most plants dealing with radioactive materials, this involves the precise control of the movement of air within each building to keep contamination at a minimum. The third type of application is in the "hot-zone" of laboratories, where proper control of the speed of the air through the hood door should be at least 125 feet/minute, Cutler stated, but not greater than 175 fpm. Above that speed, some radio-active particles under processing are carried away.

The pressure-difference method of velocity control, which finally was adopted at Argonne National Laboratory, Chicago, and at Hanford Plutonium Works, Wash., Cutler explained, depends for its operation on the fact that the velocity of air moving between two points is proportional to the difference in pressure between these points. It enables control to be maintained within relatively narrow limits.

RADIOISOTOPES & IONIZING RADIATION...investigations & notes...

MEDICAL- Tumors of the thyroid have been treated with divided doses of radioactive iodine in work by George Crile, Jr., M.D., Cleveland Clinic, Cleveland, Ohio. Dr. Crile found that multinodular goiters may regress in size and associated hyperthyroidism can be controlled by administration of multiple doses of I-131 given at intervals of 6 to 8 weeks. He found that multiple smaller doses of I-131 appear to diminish the size of nodular goiters and control hyperthyroidism more satisfactorily than single large doses. Further, since I-131 is taken up irregularly by nodular goiters, most of a given dose, regardless of size, may be concentrated in small, actively functioning areas. (Large areas, which are not functioning actively, may receive little or no radiation from a single dose of I-131.) After the most active areas are destroyed or inactivated by a small dose of I-131, it appears (Dr. Crile has observed), that the less active areas can in turn be inactivated, or destroyed by subsequent small doses. Dr. Crile suggests that tumors of the thyroid, which take up I-131 in an irregular manner, are more effectively and safely treated by divided doses of I-131, given at six to eight week intervals, than by single massive doses. (If a thyroid tumor does not take up I-131, the introduction of myxedema may stimulate growth of the tumor, Dr. Crile states.)

A study has been made of fertility in dogs following severe total body X-irradiation, by Paul E. Rekers, M. D., University of Rochester School of Medicine and Dentistry, Rochester, N.Y. In the study, pregnancy was readily and naturally induced in dogs after large doses of total body irradiation of LD-90 or more. A full term, viable pup was whelped from the dam receiving the largest dose of irradiation.(A second dam aborted, following a pulmonary infection.) The third dam delivered three living pups, one of which was undeveloped and succumbed. This dam and the two offsprings remained well. During the gestation period of 50 days or more, there was maintained constant weight and varying degrees of depression of the peripheral blood elements without bacterial invasion of the blood stream. After whelping or aborting, there was a rapid decline in the physical condition of two of the three dams, subsequent death, and the findings of sepsis and degeneration involving the hemopoietic tissue. From this data, Dr. Rekers concludes that fetal tissue does not provide an active hemopoietic center for the irradiated dam. There is, however (he notes) the question of the protective action of embryonic tissue for maintaining resistance to infection and of benefit from fetal endocrine or enzyme systems.

NUCLEAR WORK IN GREAT BRITAIN...

Britain's progress in nuclear energy activity was recently outlined before the Parliamentary and Scientific Community by Sir John Cockcroft, Director, Atomic Energy Research Establishment, Harwell (England).

Both the low power and the high power atomic piles are being operated on a 24-hour basis, Sir John stated. Large quantities of radioisotopes--such as radiocobalt and radiotantalum for industrial radiography--are produced by the piles. Work at Harwell is also being done on a new process for the separation of hafnium and zirconium.

In the nuclear power program, a new division--called the Reactor Physics Division--has been formed. In attempting to produce heat by a nuclear reaction and transfer the heat, the most difficult problems are metallurgical. This has led to facilities now set up for producing beryllium and beryllia of high purity in England. The main effort at present is centered on a design and feasibility study of an experimental power producer. The reactor will use enriched uranium, and heat will be transferred to a steam boiler by compressed gas.

Calculations that it has been possible to make so far suggest that power developed from reactors using natural uranium and burning only one part in 300 to one part in 100 of uranium might just about break even with the cost of power from coal if the cost of uranium remains at present levels. Breeder reactors would require much less uranium, if they were successful, but no costs can be predicted until breeders have been operated.

There may be other possible industrial applications of atomic piles. The intense pile reaction may be useful in the synthesis of complex chemical compounds. Already some reactions are being studied on a small scale in the Harwell Laboratories.

RAW MATERIALS...radioactive ores & other materials for nuclear work...

UNITED STATES- Forty-two square miles of land in Colorado have been restored to the public domain, after mineral exploration by the USAEC, while an additional 86 square miles of land have been withdrawn for USAEC mineral exploration. There are now approximately 198 square miles which have been so withdrawn. Although the USAEC had previously said that no more than 150 square miles would be the total withdrawn at any one time, under the expanded exploration program, the larger figure prevails.

ABROAD-BAVARIA: Important deposits of uranium minerals have reportedly been found in North Bavaria. They are said to be situated in a zone about 100 kilometers long, and to extend in a southeasterly direction from Amberg towards the Czechoslovak frontier. CZECHOSLOVAKIA: Uranium ore is reported to have been discovered near Pribram, Czechoslovakia, on the site of an old silver mine. INDIA: A report submitted by the Indian Atomic Energy Commission to the Government discusses the uranium, thorium, beryl, and monazite which occur in India . The ore-bearing belts have been found in various parts of the country, and research on methods for their commercial utilization are being conducted in special laboratories and plants. While deposits of Indian monazite sand have been worked for some years, the plant at Alwaye, in South India, will enable India to treat her own ores. The residues from this plant, which comprise uranium-bearing materials, will be further processed, by another plant, for their uranium content. The manufacture of beryllium and its alloys is also under consideration, and it is proposed to set up a pilot plant for this purpose at the National Metallurgical Laboratory, at Jamshedpur. (The Atomic Energy Commission, of India, which was set up in Aug. 1948, has Dr. H. J. Bhabha as chairman, and Dr. S. S. Bhatnagar and Dr. K. S. Krishman as members. It is the controlling agency for the country in all matters connected with the development and production of atomic energy.)

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear energy field...

Radioactivity Applied to Chemistry. Edited by Arthur C. Wahl and Norman A. Bonner, Washington University. The possibilities of applying radioactivity to chemistry with a summary of the work that has been done. Continues the study begun by the Friedlander-Kennedy "Introduction to Radiochemistry". Part I: principles and ideas; Part II: nearly 200 pages of tables with data published from the time of the discovery of radioactivity through 1949. 666 pages.--John Wiley & Sons, Inc., New York 16, N.Y. ($7.50)

Bibliography on Industrial Radiology, 1948-50. A useful reference for those in this field. 19 pages. St. John X-ray Laboratory, Califon, N. J. $2.00)

Contracting and Purchasing Offices and Types of Commodities Purchased by the USAEC. A revised edition of the book first published in October, 1949, telling how to do business with the USAEC.....A Guide for Contracting of Construction and Related Engineering Services. Another revised edition of a booklet describing the contracting policies of the USAEC for construction and architect-engineer services. Above two booklets available at 15¢ each from Superintendent of Documents, Wash. 25, D. C.

An Inexpensive, Wide Range Gamma Ray Survey Meter. This document comprises the circuit diagrams and production specifications for an inexpensive, easily operated Geiger-Muller counter. It was designed by H. D. LeVine, and H. J. DiGiovanni, of the USAEC's Instruments Branch, in the New York Operations Office. The prototype model of the counter is powered by two 1½-volt flashlight batteries, and weighs one and three-quarters pounds. One model can be used to measure high level radiation up to 500 roentgens per hour; another to measure low levels with a maximum range of 5 roentgens. For circuit diagrams and other specifications, request Document NYO-1538.--Office of Technical Services, Wash. 25, D. C. (30¢)

Sincerely,

The Staff,
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